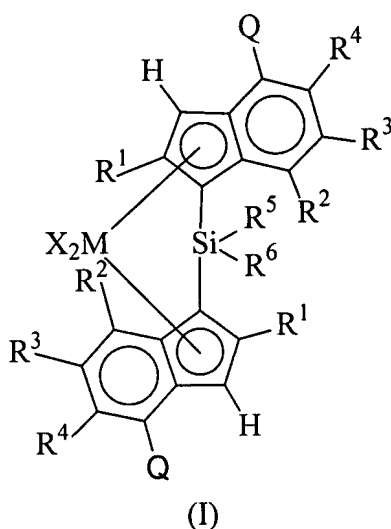


AMENDMENTS TO THE CLAIMS

1. (currently amended) A process for producing a polymer of ethylene containing from ~~0.1 to 99%~~ 5% to 40% by mol of derived units of at least one alpha-olefin of formula $\text{CH}_2=\text{CHA}$, wherein A is a $\text{C}_2\text{-C}_{20}$ alkyl radical and optionally up to 5% by mol polyene, comprising contacting, under polymerization conditions, ethylene, at least one alpha-olefin and optionally said polyene, in the presence of a non-supported catalyst system obtained by contacting:
 - a) a metallocene compound of formula (I):



wherein

M is zirconium, titanium or hafnium;

X, equal to or different from each other, is a hydrogen atom, a halogen atom, a R, OR, OR'O, OSO_2CF_3 , OCOR , SR, NR_2 or PR_2 group, wherein the R substituents are linear or branched, saturated or unsaturated $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl or $\text{C}_7\text{-C}_{20}$ -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; and the R' substituent is a $\text{C}_1\text{-C}_{40}$ -alkylidene, $\text{C}_6\text{-C}_{40}$ -arylidene, $\text{C}_7\text{-C}_{40}$ -alkylarylidene or $\text{C}_7\text{-C}_{40}$ -arylalkylidene;

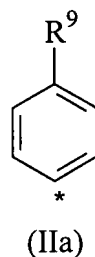
R^1 , equal to or different from each other, are a linear or branched $\text{C}_1\text{-C}_{20}$ -alkyl radical;

R^2 , equal to or different from each other, is a hydrogen atom or a linear or branched, saturated or unsaturated $\text{C}_1\text{-C}_{20}$ -alkyl radical;

R^3 and R^4 , equal to or different from each other, are hydrogen atoms or linear or branched, saturated or unsaturated C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; or they can form together a condensed saturated or unsaturated 5 or 6 membered ring, optionally containing at least one heteroatom belonging to groups 13-16 of the Periodic Table of the Elements, said ring optionally bearing at least one substituent;

R^5 and R^6 , equal to or different from each other, are hydrogen atoms or linear or branched, saturated or unsaturated C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; or they can form together a condensed saturated or unsaturated 5 or 6 membered ring, optionally containing at least one heteroatom belonging to groups 13-16 of the Periodic Table of the Elements, said ring optionally bearing at least one substituent;

Q is a radical of formula (IIa) which is bonded to the indenyl at the position marked by the symbol *;



wherein

R^9 is a group of formula $C(R^{12})_3$ wherein R^{12} , same or different, is a linear or branched, saturated or unsaturated C_1 - C_6 -alkyl radical; and

- b) an alumoxane.
2. (original) The process according to claim 1 wherein the catalyst system further comprises an organo aluminum compound.

3. (previously presented) The process according to claim 1 wherein in the compound of formula (I), X is a halogen atom, a R, OR'O or OR group; R³ and R⁴ are hydrogen atoms, methyl or they form a condensed saturated or unsaturated 5 or 6 membered ring; and R⁵ and R⁶ are C₁-C₂₀-alkyl or C₆-C₂₀-aryl radicals.

Claims 4-12 canceled

- 13 (previously presented) The process according to claim 1 wherein the alpha-olefin is 1-butene, 1-pentene, 4-methyl-1-pentene, 1-hexene, 1-octene, 4,6-dimethyl-1-heptene, 1-decene, 1-dodecene, 1-tetradecene, 1-hexadecene, 1-octadecene or 1-eicosene.
14. (previously presented) The process according to claim 13 wherein the alpha-olefin is 1-pentene, 1-hexene or 1-octene.